



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,459	12/27/2001	Yasushi Nagata	P21847	7837

7055 7590 09/17/2003

GREENBLUM & BERNSTEIN, P.L.C.  
1950 ROLAND CLARKE PLACE  
RESTON, VA 20191

[REDACTED] EXAMINER

TAKAOKA, DEAN O

[REDACTED] ART UNIT [REDACTED] PAPER NUMBER

2817

DATE MAILED: 09/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/026,459	NAGATA ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Dean O Takaoka	2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 11 August 2003.

2a) This action is **FINAL**.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-19 is/are pending in the application.

4a) Of the above claim(s) 2,3,8,11-13,17 and 18 is/are withdrawn from consideration.

5) Claim(s) 6,7,9,10 and 19 is/are allowed.

6) Claim(s) 1,4,5,15 and 16 is/are rejected.

7) Claim(s) 14 is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on 11 August 2003 is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ .
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .	6) <input type="checkbox"/> Other: _____ .

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Agahi-Kesheh et al. (U.S. Patent No. 5,513,382) and further in view of Shapiro (U.S. Patent No. 5,834,994) for reasons of record contained in the previous office action dated March 28, 2003.

#### Claim 1:

Adds “another” (a multi-layer assembly having a plurality of dielectric sheets of layers placed one over another); “being”, “with circuit electrodes”, and “a first” (said switching circuit being formed with circuit electrodes in the layers of said multi-layer assembly having a first end thereof connected to a first high-frequency terminal of said plurality of high-frequency terminals); “being”, “with circuit electrodes”, “a first”, “a second”, and “thereof being” (said filtering circuit being formed with circuit electrodes in the layers of said multi-layer assembly having a first end thereof connected to a second end of said switching circuit, a second end thereof being connected to a second high-frequency terminal of said plurality of high-frequency terminals); and “plurality of” (wherein said plurality of high-frequency terminals are provided on a mounting side...)

It is the position of the Examiner that the newly added limitations remain obvious in view of Agahi-Kesheh et al. and Shapiro.

Agahi-Kesheh et al. (Fig. 4) and Shapiro (Fig. 1) both show the stacked layers of the multi-layer assembly. Agahi-Kesheh et al. further shows the switching circuit (142, 176 – Fig. 1) being formed with circuit electrodes (connected by via holes) in the layers of said multi-layer assembly (Figs. 5B – Fig. 5E) having a first end thereof connected to a first high-frequency terminal (142 connected to 112) of said plurality of high-frequency terminals; said filtering circuit (148, et al.) being formed with circuit electrodes (shown by via connections discussed previously) in the layers of said multi-layer assembly having a first end thereof connected to a second end of said switching circuit (124), a second end thereof being connected to a second high-frequency terminal (218) of said plurality of high-frequency terminals and wherein said plurality of high-frequency terminals (all connected to 990, 952, 954, 956) are provided on a mounting side (mounting side shown by the combination of Shapiro).

Claims 2 and 3:

Canceled

Claims 4 and 5:

Claim 4 adds “an”, “the”, “an” and “the multi-layer assembly” (The high-frequency switching module according to claim 1, wherein each of the high frequency terminals is arranged extending along an outer edge of the mounting side surface of the multi-layer assembly so that each electrode width at the outer edge of the multi-layer assembly is greater than that an inner region of the multi-layer assembly).

Claim 5 adds “have a” (The high-frequency switching module according to claim 4, wherein the high frequency terminals have a substantially D character shape).

It is the position of the Examiner that the newly added limitations add nothing to the claim and remains obvious in view of Agahi-Kesheh et al. and Shapiro.

Claim 8:

Canceled

Claims 11 - 13:

Canceled

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Agahi-Kesheh et al. and Shapiro and further in view of Tanaka et al. (U.S. Patent No. 6,445,262).

Claim 15:

Agahi-Kesheh et al. and Shapiro teach high-frequency switching module discussed in the reasons for rejection of claim 1 above, but Agahi-Kesheh et al. and Shapiro do not show the well-known multi-layer capacitor which forms a part of the switching circuit is mounted on the multi-layer assembly.

Tanaka et al. shows a similar high-frequency switching module comprising a well-known art-recognized equivalent multi-layer capacitor (C23d and C23g – Fig. 5; obvious in that any high-frequency discrete chip capacitor would be a multi-layer capacitor since the capacitor would require two capacitive spaced plates, hence multi-layer) which forms a part of the switching circuit is mounted on the multi-layer assembly

so that the direction of the stacking layers in the multi-layer assembly extends substantially vertical (vertical layers shown by Agahi-Kesheh et al.) to the direction of the stacking paired capacitor electrodes provided on layers of the multi-layer capacitor (where the Examiner takes official notice that the layers of a discrete chip capacitor would have vertical stacking, i.e. well-known MLCC multi-layer chip capacitors).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted the well-known multi-layer capacitor disclosed by Agahi-Kesheh et al. and Shapiro with the well-known art-recognized equivalent surface mounted capacitors disclosed by Tanaka et al. Such a modification would have been a mere substitution of well-known art-recognized equivalent capacitors, thus suggesting the obviousness of the modification.

Claim 16:

Where Tanaka et al. shows a top mounted chip inductor (L22d, g – Fig. 5; where the Examiner takes official notice that the layers of a discrete chip inductor would have vertical stacking, i.e. well-known MLCI multi-layer chip inductors).

Claims 17 and 18:

Canceled

***Response to Arguments***

Applicant's arguments filed August 11, 2003, with respect to claims rejected under 35 U.S.C. 103(a), have been fully considered but they are not persuasive.

All objections to the Specification and Drawings, contained in the previous office action dated March 28, 2003, have been overcome in the Applicant's amendment dated August 11, 2003 and are withdrawn by the Examiner.

With respect to Applicant's arguments of traverse for rejections under 35 U.S.C. 103(a), specifically with respect to the prior art of Agahi-Kesheh et al. and Shaprio, it is the position of the Examiner that Agahi-Kesheh et al. and Shaprio show each and every limitation of the claims thus obvious in view of the prior art.

It is argued that "*AGAHI-KESHEH fails to disclose Applicant's high-frequency terminal arrangement, nor does the document suggest that the lateral sides of the multi-layer assembly be formed as no-electrode provided faces to exclude the high-frequency terminals thereon, as taught in the applicant's invention*" to which the Examiner agrees.

Agahi-Kesheh et al. teaches the "high-frequency switching module" illustrated in Fig. 4, comprising internal interconnected layers and terminals shown in Fig. 5F occurring on a top portion of the substrate (col. 11, lines 34-39) but does not teach "where lateral sides of the multi-layer assembly are not provided with any electrode for the high-frequency module". While Agahi-Kesheh et al. does not explicitly show the modules terminal connection to the pcb, it may be assumed that electrodes 950, 952 and 954 (Fig. 5F) must extend over the side of the substrate to contact the pcb. Thus the lateral side of the module includes electrodes at the bottom substrate to contact the pcb, in the absence of any explicit teaching of the terminal connections by Agahi-Kesheh et al.

Shapiro on the other hand teaches also teaches a “high frequency module” (Fig. 1) also comprising internal interconnected layers and terminals (204, 204') shown in Fig. 3 occurring on a bottom portion of the substrate (312). While Shapiro does not teach a switching module, the module of Shapiro is nonetheless a “high-frequency module” comprising internal interconnected layers, such as shown by Agahi-Kesheh et al., with terminals occurring on the bottom side of the module, therefore modification of Agahi-Kesheh et al. with the bottom side terminals of Shapiro does indeed meet all limitations of the claim.

With respect to the argument that the high frequency terminals of prior art “*were provided on lateral sides of a multi-layer assembly, resulting in an undesired situation in which the terminals act as an antenna, resulting in interference with neighboring components, thus deteriorating the electrical characteristics of the switching module*”, the combination Agahi-Kesheh et al. and Shapiro overcomes the limitation of “terminals occurring on the lateral sides of the module”. With respect to the “terminals acting as an antenna”, it may be argued that this may depend on the proximity of the neighboring components, further that each discreet component is self contained or packaged and thus individually shielded in which each factor contributes or does not contribute to the alleged “antenna” interference. While these factors may be argued, it is the position of the Examiner that this argument is not commensurate with what is being claimed, thus the arguments are not persuasive and the rejections are maintained by the Examiner.

***Allowable Subject Matter***

Claims 6, 7, 9, 10 and 19 are allowed.

Claim 6, 7, 9, and 19:

The prior art of Agahi-Kesheh et al. does not show the multi-layer assembly having the high-frequency terminals being spaced by a given predetermined distance from the outer edge of the multi-layer assembly (claim 6); a rectangular four-sided outer shape and having connection terminals provided at corners of the mounting side surface for external connection reinforcement (claim 7); the connection terminals being positioned at substantially a center of the mounting side surface of the multi-layer assembly (claim 9); and an impedance of the strip line located in the multi-layer assembly being smaller than an impedance of the strip line located on the circuit board, so that a total electrical length is not greater than  $\lambda/4$  (claim 19). Claim 10 is dependent from claim 9.

Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

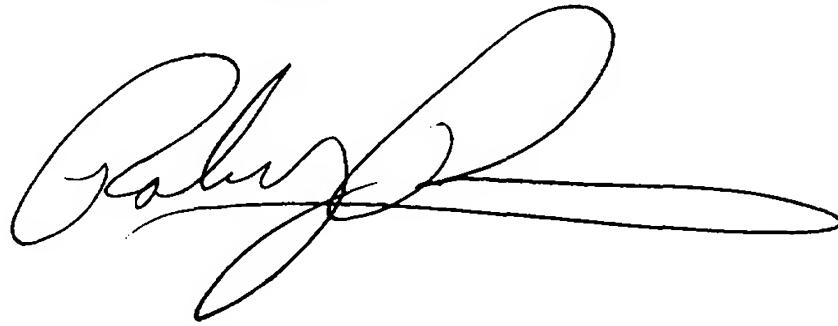
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dean O Takaoka whose telephone number is (703) 305-6242. The examiner can normally be reached on 8:30a - 5:00p Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (703) 308-4909. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Dean O Takaoka  
Examiner  
Art Unit 2817

August 11, 2003

A handwritten signature in black ink, appearing to read "Takaoka", is positioned below the typed name and title.